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ABSTRACT

For audiovisual personnel planning multi-image presentations, a programer is suggested and its purpose and functions explained. Digital, frequency and punched-taped programers are defined and discussed, and approximate costs given. Methods of operating are described, and the possible tie-in of a dissolve unit is discussed. Equipment hookups are illustrated, and a table lists available programers with costs, type, number of channels, special features, and cost. Similar information is presented for dissolve units. (SK)

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Programmers and Dissolve Controls for Multi-Image Presentations

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PROGRAMMERS AND DISSOLVE UNITS

DO YOU NEED A PROGRAMMER?

After presenting your multi-image presentation manually, you may decide to program it. Programming your presentation may be especially appropriate if:

1. there are long time periods between showings.
2. operators who will be showing the presentation are unfamiliar with its sequence and timing.
3. more than one presentation has been prepared for showing.
4. the presentation requires many pieces of equipment and only one or two persons are available to show it.

If there are long time periods between showings of a multi-image presentation used with recorded audio, the operator will have to run the presentation several times manually to refresh his memory of the proper sequence and timing. This will require finding space to set up the equipment, practicing several times, breaking down and packing the equipment, and then transporting it to the presentation site. Sometimes this can be avoided by setting up early at the presentation site, but often times the presentation schedule does not allow for this.

If the operators who set up the presentation are not familiar with its sequence and timing, the same problems occur. They must not only learn the sequence and timing but also become familiar with the script and equipment. This requires much time and can be avoided by programming the presentation.

Every presentation will require different sequencing and timing to enhance the particular photographic effect and visual impact of the presentation. Even if the same person operates several presentations each time they are shown, he will need additional time to review individual presentations. A programmer has its own"memory" and is not subject to such constraints.

If a presentation is moderately complex and requires many pieces of equipment, manual operation becomes impossible without several trained people at the equipment, someone to operate the house lights, and one person to introduce the presentation. If only one or two persons are available to show the presentation, a programmer is almost a necessity. Some types of programmers can control house lights, open curtains and drapes, lower screens, operate equipment, and, in general, assist in centralizing the control of a presentation to one or two persons.

CONSIDERATIONS IN PURCHASING A PROGRAMMER

If any of the above considerations are appropriate to your situation, you may decide to purchase a programmer. Before you buy a programmer you may ask yourself some of the following questions:

1. What, exactly, is a programmer?
2. What kinds of things can a programmer do?
3. What type of programmers are available?
4. How much does a programmer cost?
5. Are programmers difficult to operate?

A programmer is nothing more than a sophisticated switching device. Sounds as simple as it really is. If, for example, you plan to show a three-screen presentation manually, you will have three remote controls taped on a piece of cardboard or you will have a commercially prepared three projector control (Fig. 1). Each control advances one slide projector. You press each switch while listening to the audio portion of the presentation and reading your script. You, in effect, take the place of the programmer. A programmer does the same job. Instead of pressing switches while reading from a script, it "reads" electronic pulses sent from a sound track synchronized with the audio portion of the presentation and actuates the correct switches. The obvious advantage is that you don't have to remember which switches to press.

So a programmer does the switching and "remembers" exactly when to switch what. Some programmers can do a variety of things with this switching capability. They can operate lights, turn motion picture projectors on for a specified period and then turn them off, lower and raise motorized screens, and activate other programmable pieces of equipment such as companion programmers or dissolve units.

In general, as the number of jobs a programmer can do increases, so does the price. The number of jobs a programmer can do is usually expressed in number of "functions" or sometimes in number of channels. Most often not all channels can provide the same number of functions. For example, a programmer may have four channels, three of which can handle switching slide projectors and one of which can handle switching

something which has a greater power requirement such as a motion picture projector. The number of channels and functions varies among programmers. Detailed information is available on each piece of equipment from the manufacturer. Equipment manufacturers are listed in the NAVA Equipment Directory.[1.]

There are three main types of programmers: digital, frequency, and punched tape. In each case the type depends upon the way in which the programmer reads the electronic pulse sent to it from magnetic recording tape. The digital programmer "reads" a fixed number of pulses to actuate each channel. A channel will actuate only when the programmer reads that channel's particular number of pulses. The channels of a frequency programmer are actuated by differing frequencies. One channel will work on one frequency and a second channel on another. In the case of the punched tape programmer, the punched tape is advanced by an electronic signal from magnetic tape. The punched tape head on the programmer then allows switch contact through the holes of the punched tape. The channels corresponding to the holes in the punched tape are then actuated. There are advantages and disadvantages to all three types. It's a good idea not to mix systems. If a digital programmer is purchased, then dissolve units compatible with a digital programmer must be used.

In the frequency system, there is a limit to the number of frequencies which may be mixed together on the same track before encountering problems with haromics and distortion. Frequency is also adversely

1. The Audio-Visual Equipment Directory National Audio-Visual Association, Inc., 3150 Spring Street, Fairfax, Virginia 22030

affected by tape speed variations, tape drop-out, wow and flutter, and power surges. Basically, all these problems can be eradicated by using a good stereo tape recorder. Some frequency programmers do become detuned, however, and have to be returned to the factory for adjustment. Newer frequency type programmers contain improved circuitry which effectively negates these problems.

The punched tape programmer is very dependable and probably the least expensive if compared with digital and frequency programmers with the same functions. The only problem is that the tape must be punched. Usually this is done manually which requires a tape punch and extra time.

In general the programmer's cost depends on how many things it can do. The more options, the greater the cost. There are quite a few programmers in the $300 - $500 price range which can handle four to eight functions. But remember, the number and type of functions differ somewhat among programmers. Merely stating that a programmer has six functions doesn't indicate what the six functions can do. That information has to be provided by the manufacturer.

ARE PROGRAMMERS DIFFICULT TO PROGRAM AND OPERATE?

Every beginning is difficult. The difficulties in programming differ with the type of programmer. Digital and frequency programmers can be programmed while the multi-image presentation is being shown. As the presentation is shown, each channel is operated manually. The digital or frequency cue, which advances the equipment connected to each channel, is also sent (from the programmer) to one of the tracks of a

sterro tape recorder which is in the record mode. (Some programmers require their own special tape recorders.) At the same time the audio portion is being played on the other track so both cues and audio portion are synchronized.

At the conclusion of the manual presentation, the slide trays are reset. The programmer is put in the "operate" mode, both tracks of the stereo tape recorder are put in the play mode, and the presentation runs itself. Some expensive punched tape programmers incorporate a tape punching mechanism in the programmer which punches holes in the tape for each channel as the program is run manually. Then the presentation can be played back automatically. Unautomated punched tape programmers do not offer this option. The tape has to be punched by hand using a tape punching tool. This is slightly more time consuming but also somewhat more dependable than the other methods.

DISSOLVE UNITS

Depending upon your needs, you may decide that a programmer offers too few special effects for the message you had in mind. If that is the case you may wish to use a dissolve unit with your presentation. Dissolve units can be operated manually while the presentation is being shown or actuated by the programmer. Dissolve units are of two general types -- manual and programmable. The manual dissolve units usually include a number of options and an infinitely variable manual dissolve or a pre-set dissolve. The infinitely variable manual dissolve is controlled by manually operating small dials, switches, or levers,

which operate potentiometers which actuate dimmers. The pre-set dissolve is actuated by a switch relay or thyristor. The programmable dissolve units offer dissolves of preset duration (sometimes several of them - for example, 2, 4, and 8 second dissolves).

The switch and dimmer provide other effects known variously as alternate or animate, flip or cut (with the off projector advancing), superimpose (with both projectors on), and flash (with one projector flashing an image over the image from a second projector). Options vary among dissolve units and should be studied carefully before purchase. Compatability is very important in building a system. Some dissolve units work only with equipment manufactured by the same company. It's a good idea to consider all other components of a system before buying one component. It's possible that buying one component of a system may rule out adding components from other systems.

EQUIPMENT HOOKUPS

In order to get a little better idea of exactly how a simple system works, examine Fig. 2. The diagram shows how the system is hooked together. A cassette recorder is pictured because of the growing number of monaural cassette recorders which incorporate a synchronization track. (Examples. Wollensak 2551 and Hitachi AVA 1000 both have 1000 Hz separate track advance signals. The Hitachi also offers a 50 Hz. superimposed signal and a 150 Hz. stop signal.) One channel of the stereo cassette tape recorder (either left or right track) is playing the audio portion of the presentation. The other channel of the recorder carries the tone cue to the programmer. The programmer

then switches the appropriate slide projector.

Fig. 3 shows a more complex setup. In this case at least three tape recorder channels are needed; consequently a four track recorder is used. Two tracks play stereo music. One track cues the programmer which actuates the dissolve units which trigger the projectors.
In Figures 1 - 3 the slide projectors could have been filmstrip projectors or other pieces of equipment depending upon the options available with the particular programmer.

In some cases a very effective presentation can be arranged by programming part of the production and manually operating the rest. An infinitely variable manual dissolve unit used with two projectors on center screen can be operated manually. The outside screens are advanced simultaneously. In this case a tape recorder with advance signal can advance the visuals on the outside screens by using a "Y" cord to the two outside projectors from the one "signal out" jack on the recorder.

Hopefully you now understand programming and dissolve equipment a little better. Local sales representatives for the various companies listed in the AV EQuipment Directory under "Program Control Devices" can be of great help in ironing out any specific problems you may have. Just remember to start out with a simple setup until you gain the confidence and expertise you need for the "really big show!".

Table 1 lists some of the many programmers available commercially.

Table 2 describes a number of dissolve units.

Hints On Other Equipment

Usually slide projectors are not the only equipment used in a sophisticated multi-image presentation. Movie projectors, tape recorders, and filmstrip projectors are also used. Here are some helpful hints involving these pieces of equipment which can make your presentation a lot easier.

When using slide projectors, try to use the same make and model on each screen. The reason is different makes and models throw light of different intensity and have differing color balance. In other words a panorama (which is one image over multi screens) would not be at its' best with one section brighter and a different color from the others. The Kodak Carousel and Ektagraphic projectors are recommended because most programmer and dissolve unit manufacturers supply their equipment with Kodak plugs.

Movie projectors and tape recorders present a special problem. Most 16mm and all 8mm or Super 8mm projectors use inductive type motors. Inductive motors react to line voltage - line voltage may not always be exactly 110 volts at all times. If it's less than 110 the projector will run slower than at 110 - if it is greater than 110, the projector will run faster. When you program a movie segment, you are allowing a set amount of time for the projector to run. If the voltage at the time of presentation is less than 110 volts the segment will run slightly longer than the time allowed, and the next slide segment may begin before the movie segment ends. If the voltage is higher, the reverse may occur.

The solution is to use movie projectors and tape recorders with synchronous motors. A synchronous motor is not sensitive to voltage fluctuations. If this is impossible, you should experiment a bit. If the presentation doesn't require split second timing, you may be able to manually compensate for the variations. If the movie projector will be used in several segments of the presentation, be sure to leave sufficient leader between segments to allow for "run down time". "Run down time" is the few seconds it takes the projector to come to a complete stop after power is cut.

Filmstrip projectors usually require different plugs than slide projectors and the image is not as brilliant at a distance. Its a good idea to test the filmstrip projector at presentation distance to make sure the effect is consistant with what you expect.

Fig. 1

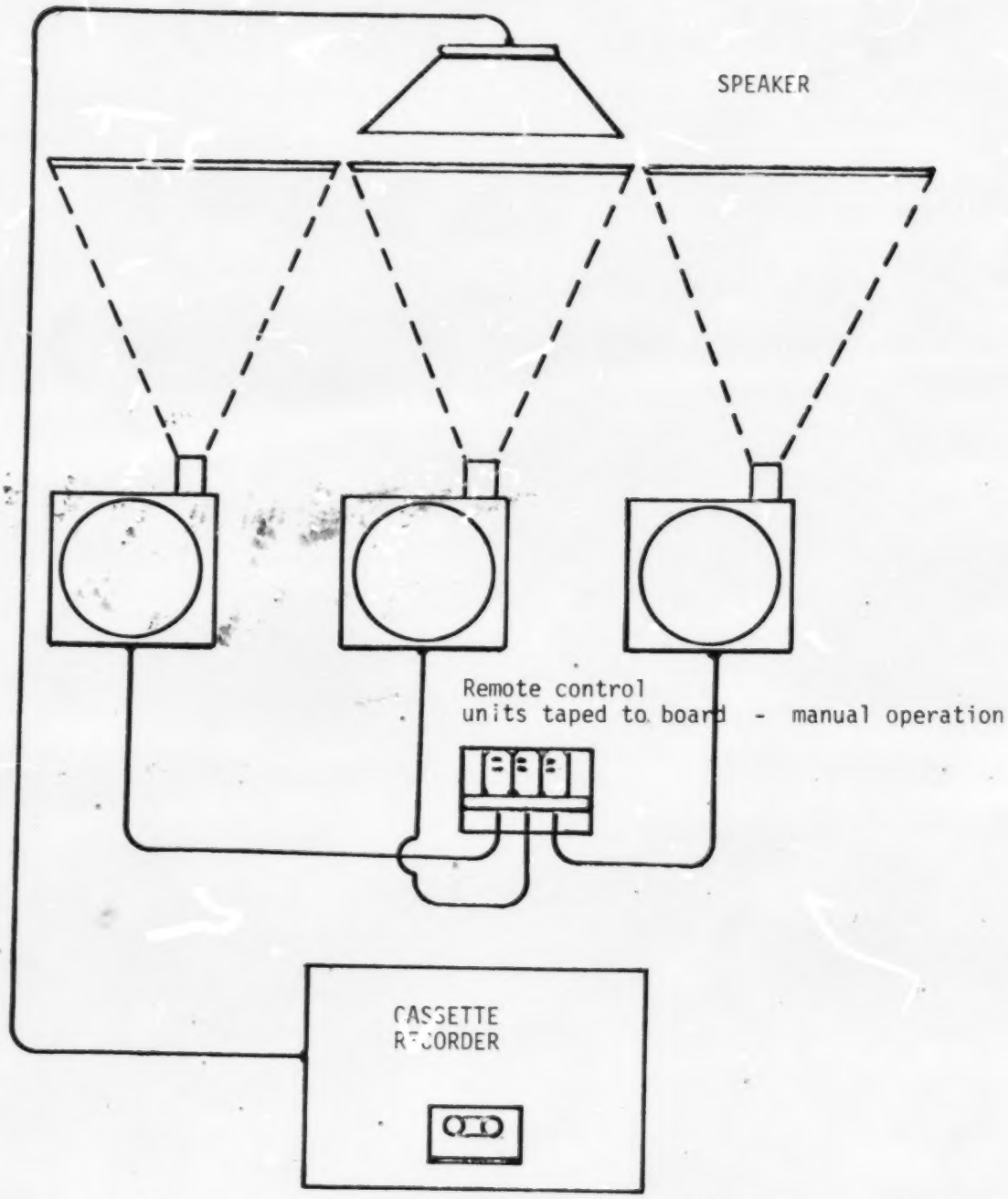
SPEAKER
Remote control
units taped to board - manual operation
CASSETTE
RECORDER

Fig. 2

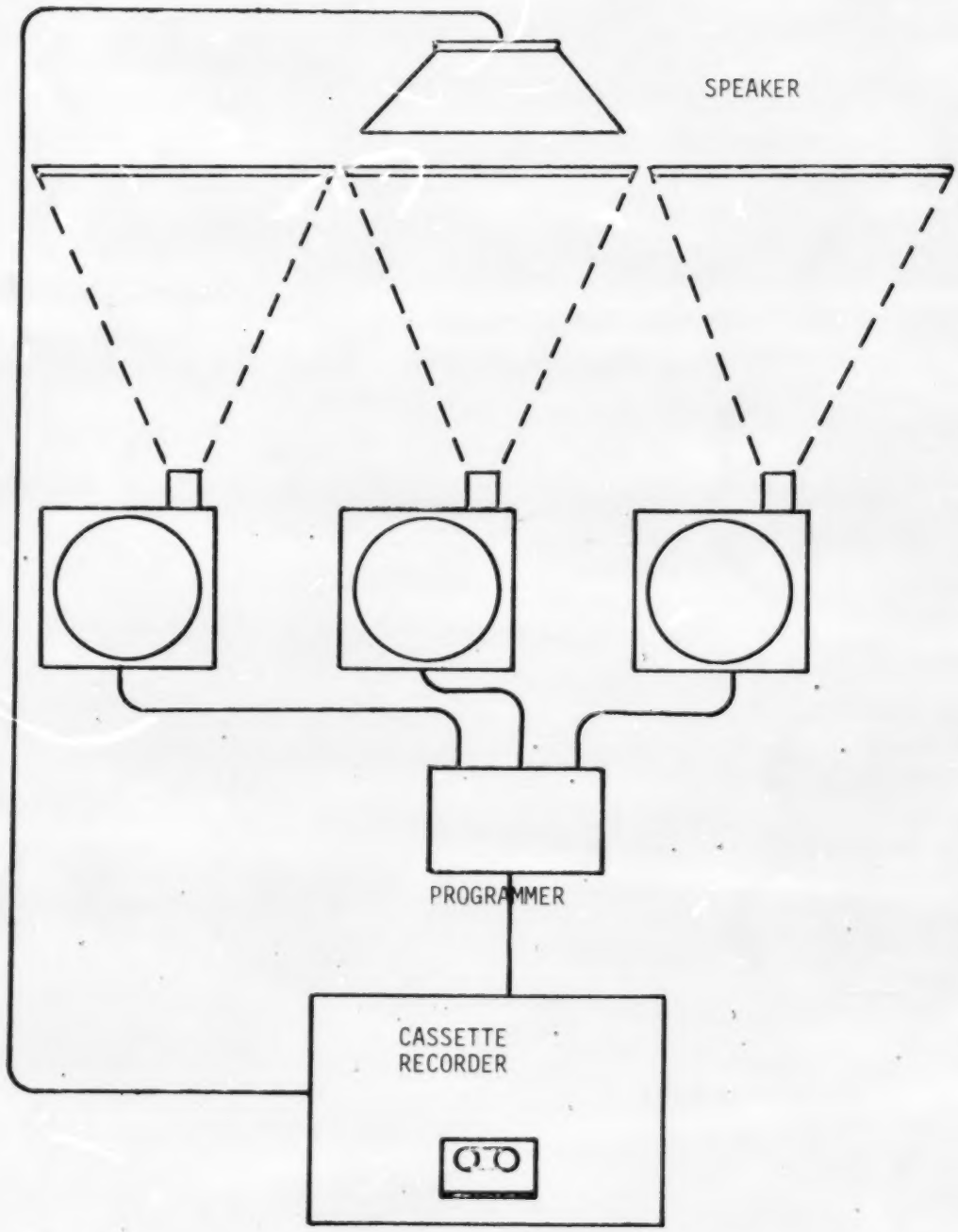

Fig. 3

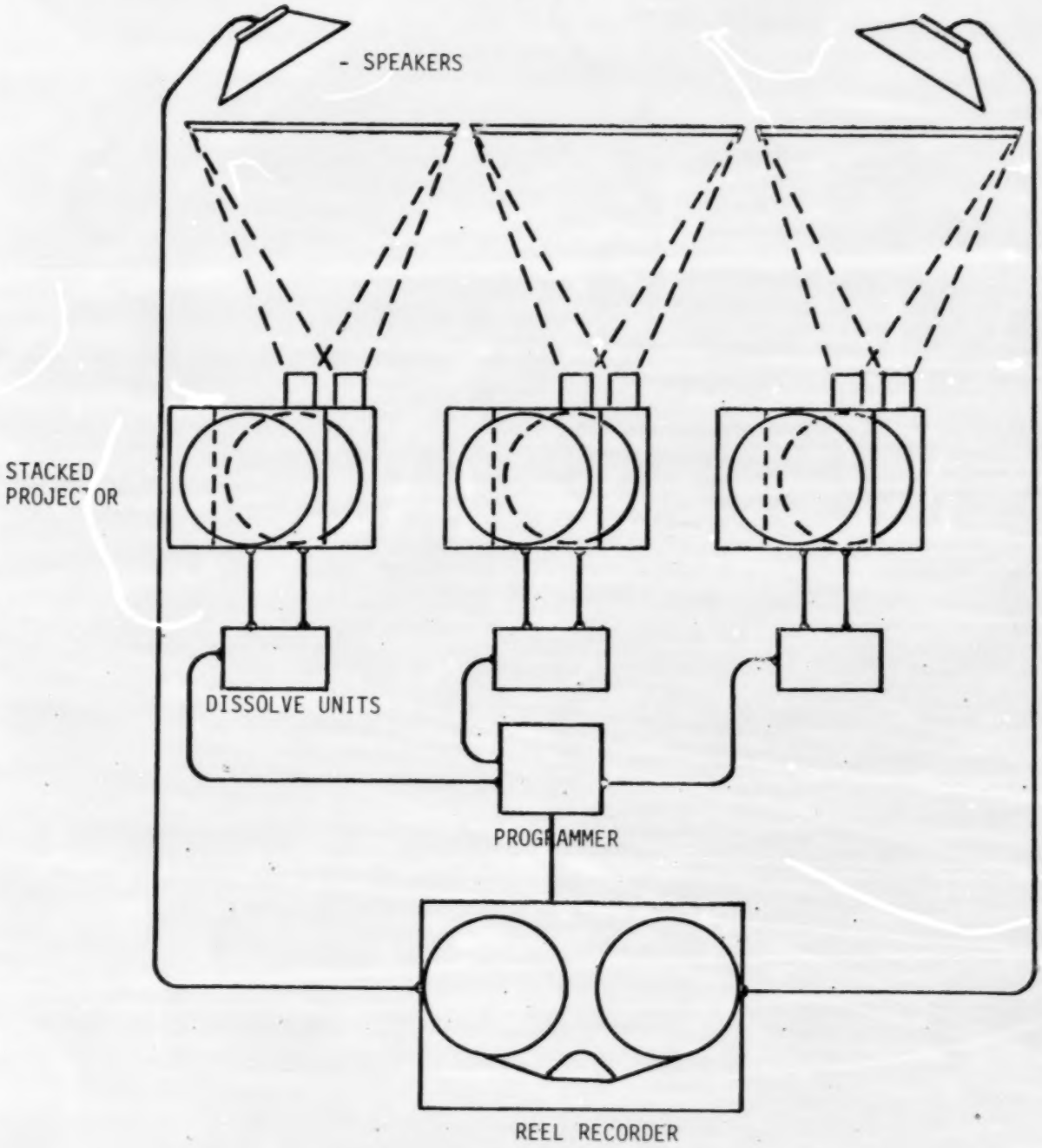
- SPEAKERS
STACKED
PROJECTOR
DISSOLVE UNITS
PROGRAMMER
REEL RECORDER

TABLE 1

Information compiled in this table was taken directly from manufacturer's advertising literature. Only features stipulated specifically by the manufacturers are included.

PROGRAMMERS

Manufacturer	Model	Type	Channels	Special Features	Cost
Arion Corporation	900 Command Performance Sys.	Digital	15	Electronic Editing & Correction	No quote
Audio Visual Laboratories, Inc.	Acuetone	Frequency	12		$ 665.00
Audio Visual Laboratories, Inc.	Show Pro II	Punched Tape	40	Expandable to 200 channels Automatic tape punching, editing, duplication.	
Audio Visual Laboratories, Inc.	Show Pro I	Punched tape	8	Expandable to 40 channels. Automatic tape punching, editing, duplicating.	$1895.00
Clear Light Productions	1200 programmer	Punched tape	8	Up to 448 functions.	$1675.00
Columbia Scientific Industries	Media Master 1200	Frequency	13	Contains a dissolve unit and stereo tape recorder with added cue channel, a complete control system for AV presentations.	
Columbia Scientific Industries	Media Master 2003	Frequency	13	Incorporates three dissolve units and stereo tape recorder with added cue channel - a complete control system especially designed for three-screen applications.	
Columbia Scientific Industries	Media Master 375	Frequency	5	Dissolve units can be added	$ 330.00
DuKane Corporation	9A1070	Punched tape	8	Each channel can accept equipment which requires heavy load up to 100 amp total capacity.	$2150.00
EEG Enterprises, Inc.	Cue Commander	Frequency	4	Dissolve units and add-on programmer can be added.	$ 329.00

PROGRAMMERS (cont.')

Manufacturer	Model	Type	Channels	Special Features	Cost
Electronic Designers, Inc.	MMP - 10	Frequency	3		$ 199.00
Electronic Designers, Inc.	MMP - 20	Frequency	4	Expandable to 8 and 12 channels.	$ 345.00
Hampton Engineering Associates, Inc.	PC/PR	Punched tape	8	Automatic tape punching, reading and duplicating.	$3218.00
Hampton Engineering Associates, Inc.	ED-3 Encoder-Decoder	Frequency	3		$ 502.00
MacKenzie Laboratories, Inc.	Tri/Tone - 1	Frequency	3	Additional programmer and dissolve units may be added.	$ 345.00
MacKenzie Laboratories, Inc.	Tri/Tone - 2	Frequency	3	Companion unit to Tri/Tone - 1.	$ 295.00
Spindler and Sauppe	Quadra Que 1	Frequency	4	4th Channel handles up to 1500 watts. Dissolve units can be added.	
Spindler and Sauppe	Quadra Que 2	Frequency	4	Used to expand S & S Quadra Que 1 to eight channels. Dissolve units can be added.	$ 535.00
Spindler and Sauppe	Media Mix Programmer	Punched tape	27	A variety of AV devices, including dissolve units may be added.	$1695.00
Spindler and Sauppe	Mini Q 2031	Frequency	4	115V, 230V dissolve units can be added.	$ 335.00
United Audio Visual Corp.	Cuemaster Mark 60	Punched tape	8	Electric tape punch Channel expander. Expander commander. Dissolve units can be added.	

PROGRAMMERS (cont.')

Manufacturer	Model	Type	Channels	Special Features	Cost
United Audio Visual Corp.	Audio Cuemaster	Pulse	8	Expandables to 200 channels.	$ 750.00

TABLE 2

Information compiled in this table was taken directly from manufacturer's advertising literature. Only features stipulated specifically by the manufactuerers are included.

DISSOLVE UNITS

ARION CORPORATION

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
904 Fader Unit	X		X			X				None quoted.

AUDIO VISUAL LABORATORIES, INC.

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
Mark II	X		X	X	X	X	X	X	4500 watt capacity. Triple projector dissolve.	$ 365.00

AUDIO VISUAL LABORATORIES, INC.

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
Mark IV	X		X	X	X	X	X	X	3000 watt capacity.	$ 665.00

CLEAR LIGHT PRODUCTIONS

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
1210 Dissolve	X		X	X	X	X	X			$ 655.00

CLEAR LIGHT PRODUCTIONS

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
1214 Dissolve									Companion unit of 1210 Dissolve with built-in encoder/ decoder.	

COLUMBIA SCIENTIFIC INDUSTRIES CORPORATION

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
Media Master 400	X		X		X	X			Compatible with all programmers Presence of tone-cut Absence of tone-long dissolve	$249.50

EEG ENTERPRISES, INC.

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
Dissolve Director	X		X	X	X	X	X		Can be used with most other 4 channel programmers	$429.00

DISSOLVE (cont.')

HAMPTON ENGINEERING ASSOCIATES, INC.

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
DPD-10	X		X		X					$297.00

HAMPTON ENGINEERING ASSOCIATES, INC.

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
DPD-10B	X		X		X	X			Remote Control	$ 490.00

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MacKENSIE LABORATORIES, INC.

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
Adjusto-Dissolve	X		X	X	X					$ 345.00

MacKENSIE LABORATORIES, INC.

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
ADK-3 Dissolve Expander									Expands the Adjusto-Dissolve to include "Super" & "flash" manually or from a programmer.	$ 145.00

DISSOLVE (cont.)

RMF PRODUCTS

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
275 Image Blender	X (of dissolve only)		X (of dissolve only)						Manual remote control which allows alternate, cut, Superimpose, Flash between two projectors	$ 349.95

22 SIGHT AND SOUND SYSTEMS

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
93	X									$ 99.95

SPINDLER AND SAUPPE

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
Dynamic Dissolve	X		X	X	X	X	X	X	Multiple disclosure.	$ 645.00

DISSOLVE (cont.')

SPINDLER AND SAUPPE

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
Dynamic Cue Dissolve	X		X	X	X	X				$ 930.00

SPINDLER AND SAUPPE

Model	Manual Preset	Manual Variable	Programmable (Preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
Selectro Dissolve	X		X	X	X	X	X		Push button quickly for medium dissolve. Hold button a little longer for a cut. Compatible with all programmers.	

UNITED AUDIO VISUAL CORPORATION

Model	Manual Preset	Manual Variable	Programmable (preset)	Alternate	Cut	Superimpose	Flash	Reverse	Special Features	Cost
Screenmaster Mark V Dissolve	X		X		X	X	X			$ 594.00